

CLAIMS

What is claimed is:

1 1. A PCI-X DDR driver for providing internal termination to a transmission
2 line, comprising:

3 a driver control;

4 a plurality of N-channel devices, the plurality of N-channel devices being divided
5 into at least two groups; and

6 a plurality of P-channel devices, the plurality of P-channel devices being divided
7 into at least two groups,

8 wherein the driver control is suitable for individually controlling selected ones of
9 the groups of N-channel and P-channel devices on or off for providing
10 internal termination to the transmission line.

1 2. The PCI-X DDR driver as claimed in claim 1, wherein the driver control
2 controls selected ones of the groups of N-channel and P-channel devices on or off for
3 providing one of pull-up type termination, pull-down type termination, and symmetric
4 type termination to the transmission line.

1 3. The PCI-X DDR driver as claimed in claim 2, wherein the driver control
2 enables selected ones of the groups of P-channel devices for providing pull-up
3 termination.

1 4. The PCI-X DDR driver as claimed in claim 3, wherein the transmission
2 line includes a transmission line end having a terminator impedance, and wherein the
3 terminator impedance is connected to a power supply VDD.

1 5. The PCI-X DDR driver as claimed in claim 2, wherein the driver control

2 enables selected ones of the groups of N-channel devices for providing pull-down
3 termination.

1 6. The PCI-X DDR driver as claimed in claim 5, wherein the transmission
2 line includes a transmission line end having a terminator impedance and wherein the
3 terminator impedance is connected to a system ground VSS.

1 7. The PCI-X DDR driver as claimed in claim 2, wherein the driver control
2 enables selected ones of the groups of both P-channel and N-channel devices for
3 providing symmetric termination.

1 8. The PCI-X DDR driver as claimed in claim 7, wherein the transmission
2 line includes a transmission line end having a terminator impedance and wherein the
3 terminator impedance is connected to both a power supply VDD and a system ground
4 VSS.

1 9. The PCI-X DDR driver as claimed in claim 1, wherein the driver control
2 includes an impedance controller for correcting process/voltage/temperature effects.

1 10. The PCI-X DDR driver as claimed in claim 1, wherein a size of at least
2 one of the groups of N-channel and P-channel devices has its size weighted to provide an
3 output impedance for given process/voltage/temperate conditions

1 11. The PCI-X DDR driver as claimed in claim 10, wherein the size of at least
2 one of the groups of N-channel and P-channel devices has its size weighted in
3 conjunction with a discrete resistor.

1 12. A PCI-X DDR system, comprising:
2 a transmission line; and
3 driver for providing internal termination to the transmission line, the driver including:
4 a driver control;
5 a plurality of N-channel devices, the plurality of N-channel devices being divided
6 into at least two groups; and
7 a plurality of P-channel devices, the plurality of P-channel devices being divided
8 into at least two groups,
9 wherein the driver control is suitable for individually controlling selected ones of
10 the groups of N-channel and P-channel devices on or off for providing
11 internal termination to the transmission line.

1 13. The PCI-X DDR system as claimed in claim 12, wherein the driver control
2 controls selected ones of the groups of N-channel and P-channel devices on or off for
3 providing one of pull-up type termination, pull-down type termination, and symmetric
4 type termination to the transmission line.

1 14. The PCI-X DDR system as claimed in claim 13, wherein the driver control
2 enables selected ones of the groups of P-channel devices for providing pull-up
3 termination.

1 15. The PCI-X DDR system as claimed in claim 14, wherein the transmission
2 line includes a transmission line end having a terminator impedance, and wherein the
3 terminator impedance is connected to a power supply VDD.

1 16. The PCI-X DDR system as claimed in claim 13, wherein the driver control
2 enables selected ones of the groups of N-channel devices for providing pull-down
3 termination.

1 17. The PCI-X DDR system as claimed in claim 16, wherein the transmission
2 line includes a transmission line end having a terminator impedance and wherein the
3 terminator impedance is connected to a system ground VSS.

1 18. The PCI-X DDR system as claimed in claim 13, wherein the driver control
2 enables selected ones of the groups of both P-channel and N-channel devices for
3 providing symmetric termination.

1 19. The PCI-X DDR system as claimed in claim 18, wherein the transmission
2 line includes a transmission line end having a terminator impedance and wherein the
3 terminator impedance is connected to both a power supply VDD and a system ground
4 VSS.

1 20. The PCI-X DDR system as claimed in claim 12, wherein the driver control
2 includes an impedance controller for correcting process/voltage/temperature effects.

1 21. The PCI-X DDR system as claimed in claim 12, wherein a size of at least
2 one of the groups of N-channel and P-channel devices has its size weighted to provide an
3 output impedance for given process/voltage/temperate conditions

1 22. The PCI-X DDR system as claimed in claim 21, wherein the size of at
2 least one of the groups of N-channel and P-channel devices has its size weighted in
3 conjunction with a discrete resistor.

1 23. A PCI-X DDR driver for providing internal termination to a transmission
2 line, comprising:
3 a plurality of N-channel devices, the plurality of N-channel devices being divided
4 into at least two groups;
5 a plurality of P-channel devices, the plurality of P-channel devices being divided
6 into at least two groups;
7 means for individually controlling the groups of N-channel and P-channel
8 devices;
9 wherein the controlling means is suitable for individually controlling selected
10 ones of the groups of N-channel and P-channel devices on or off for
11 providing internal termination to the transmission line.

2025 RELEASE UNDER E.O. 14176